# Productivity of the Nigerian Tax System: 1970–1990

Ademola Ariyo
*Department of Economics*
*University of Ibadan*
*Ibadan, NIGERIA*

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# Abstract

Given the negative impact of persistent unsustainable fiscal deficits on the Nigerian economy, there is now a consensus among interested parties on the need to address the problem effectively. The literature suggests three approaches for this purpose: increase in revenue, reduction in expenditure, or a continuation of both. An appraisal of the budgetary process in Nigeria shows that annual expenditure proposals are always anchored on projected revenue, thus the accuracy of revenue projection is a necessary condition for devising an appropriate framework for fiscal deficit management in Nigeria.

This study, therefore, evaluates the productivity of the tax system for the period 1970—1990 to devise a reasonably accurate estimation of Nigeria's sustainable revenue profile. This will assist in the design of an appropriate expenditure profile as a means of averting the persistent unsustainable fiscal deficit in the country. Overall, the study reports a satisfactory level of productivity of the tax system. Although the advent of the oil boom, encouraged some laxity in the management of non-oil revenue sources, this was rectified to a reasonable extent with the commencement of the structural adjustment programme.

The study concludes that the current revenue profile is sustainable, with little prospect for significant improvement in the short run. It also suggests that a significant reduction in public expenditure and prudent management of financial resources are the most feasible solutions to the problem of unsustainable fiscal deficit in Nigeria. Finally, the report underscores the urgent need for the improvement of the tax information system to enhance the evaluation of the performance of the Nigerian tax system and facilitate adequate macroeconomic planning and implementation.

# I. Introduction

The magnitude of government surplus or deficit is probably the single most important statistic measuring the impact of government fiscal policy on an economy (Siegel, 1979). In view of its phenomenal growth, it is now widely accepted that public sector finances and related policies constitute a central aspect of economic management. The quality of this management in no small measure influences overall macroeconomic performance as well as the distribution of resources between the public and private sectors.

Fiscal deficit has become a recurring feature of public sector financing all over the world. Its widespread use is partly influenced by the desire of various governments to respond positively to the ever-increasing demands of the populace and to enhance accelerated economic growth and development (Ariyo, 1993). This tendency toward deficit financing is more pronounced in developing countries where the populace looks to the government for the satisfaction of most needs.

The literature suggests three issues that should guide decisions on the fiscal deficit profile for an economy. The first issue relates to the usefulness of fiscal deficit as a tool for enhancing accelerated growth and development. This is an issue on which there is as yet no consensus among economists, given the divergent findings of reported studies. While some studies (e.g., Thornton, 1990) indicate a net positive effect, others (Baily, 1980; Feldstein, 1980; Landau, 1983) suggest a net negative effect. Mixed results have also been reported by some studies (e.g., Ariyo and Raheem, 1991).

The second issue relates to the mode of financing the deficit. Some of the financing options include the running down of government accumulated cash balance, net borrowing from the banking system or from abroad, issuing of new currency as well as drawing down of foreign assets (Ariyo and Raheem, 1990). Each mode of financing could have a differential impact on the economy (Chibber and Khalizadeh-Shirazi, 1988; Yellen, 1989). Third, and most importantly, a fiscal deficit profile must be sustainable (Buiter, 1983). Otherwise, the country will become perpetually insolvent (Wickens and Uctum, 1990).

Of concern to economists and interested observers in recent times is the rising magnitude of deficits by various governments. There is therefore a growing recognition that the formulation and implementation of macroeconomic management proposals, most especially for economic reforms, should explicitly recognize the implications of fiscal deficit on the economy. These reforms should cover not only the size and financing patterns of government deficits but also the structure of taxation and the level and composition of public expenditure (Chibber and Khalizadeh-Shirazi, 1988).

The findings of recent studies suggest the need for concern about the problem of fiscal deficit in Nigeria. For example, the findings of a study by Ariyo and Raheem (1990) reported in Table 1 show that fiscal deficit has become a recurring feature of Nigeria's fiscal policy. They also note the absence of any identifiable macroeconomic objective to justify this deficit-prone behaviour. Further, Ariyo (1993) reports that the level of fiscal deficit in Nigeria has become unsustainable since 1980.

**Table 1: Federal government's fiscal operation (1970-—1990) (₦ million)**

| Year | Federally retained revenue | Expenditure | Surplus (+)/ Deficit (-) |
|---|---|---|---|
| 1970 | 365.7 | 838.8 | -473.1 |
| 1971 | 838.0 | 639.0 | +199.0 |
| 1972 | 1,074.1 | 977.3 | +96.8 |
| 1973 | 1,388.0 | 1,091.3 | +296.7 |
| 1974 | 3,894.3 | 2,097.5 | +1,796.8 |
| 1975 | 4,474.1 | 4,902.1 | -427.4 |
| 1976 | 5,623.1 | 6,691.3 | -1,068.2 |
| 1977 | 6,466.5 | 7,367.9 | -901.5 |
| 1978 | 6,131.1 | 8,520.0 | -2,389.0 |
| 1979 | 8,868.4 | 7,406.7 | +1,461.7 |
| 1980 | 12,138.7 | 14,113.9 | -1,975.2 |
| 1981 | 7,068.3 | 10,774.4 | -3,708.5 |
| 1982 | 7,490.4 | 12,378.5 | -4,888.1 |
| 1983 | 6,272.0 | 12,086.1 | -5,814.1 |
| 1984 | 6,938.5 | 17,403.7 | -10,465.2 |
| 1985 | 9,640.3 | 14,828.8 | -5,188.5 |
| 1986 | 7,969.4 | 16,773.7 | -8,804.3 |
| 1987 | 16,129.0 | 22,018.7 | -5,889.7 |
| 1988 | 15,588.6 | 27,749.5 | -12,161.9 |
| 1989 | 25,893.0 | 41,027.0 | -15,134.0 |
| 1990 | 39,033.0 | 61,149.0 | -22,116.0 |

Sources: Central Bank of Nigeria: Annual Report and Statements of Accounts (various years); Federal Office of Statistics: Annual Digest of Statistics (various years).

There are three options open to government for addressing the problem of non-sustainable fiscal deficits. According to Zee (1988), these include (1) the determination of the optimal tax rate for a given level of expenditure; (2) the determination of the optimal level of expenditure for a given tax rate; and (3) the simultaneous determination of the optimal level of expenditure and the tax rate. This study focuses on the first option to enable us to determine a sustainable level of revenue as a basis for evolving a sustainable deficit profile in Nigeria. This choice was influenced by the following considerations.

First, this study is essentially a follow-up to related studies by Ariyo and Raheem (1990) and Ariyo (1993), which indicate that the level of fiscal deficit in Nigeria is no longer sustainable and it is not desirable to continue to incur budget deficit for financing public expenditure. Rather, efforts should be made to reduce expenditure or raise additional revenue. Second, it is preferable to focus on revenue enhancement in view of

the current situation in Nigeria. The country is implementing a transition programme requiring large financial outlay on activities that are not directly productive, a situation that is expected to continue for some years. Hence, significant reduction or switching of public expenditure into directly productive real sectors of the economy is not a viable proposition in the short run.

Third, Lipumba and Mbelle (1990) indicate that increasing tax revenue and reducing expenditure are the most important fiscal challenges facing a government entangled in the budget deficit problem. Ndekwu (1991) also notes that more than ever before, there is now a great demand for the optimization of revenue from various tax sources in Nigeria. This probably influenced the decision of the Federal Government of Nigeria (FGN), which in 1991 set up a Study Group on the Review of the Nigerian Tax System and Administration. Finally, an accurate estimation of the optimal level of expenditure requires a knowledge of the productivity of the tax system. This will assist in identifying a sustainable revenue profile for the country. It will also help in determining appropriate modifications to the existing tax structure and rates as well as areas for improving tax administration.

It should be noted that the advent of the oil boom in the 1973/74 fiscal year encouraged over-reliance on oil revenue to the neglect of the traditional revenue sources. As a result, some non-oil revenue sources were either abandoned or became of less concern to the government, and no attention was paid to assessing the optimal revenue derivable from these non-oil sources. Further, there were episodic jumps in the country's total annual revenue and hence budget deficits (Ariyo and Raheem, 1990). This is a reflection of the vagaries of the oil market whose fortunes fluctuate widely and unpredictably.

With this background,this study appraises the productivity of the Nigerian tax system. This will assist in an objective assessment of the country's sustainable level of revenue as a basis for determining an optimal level of expenditure. It will also facilitate the design of fiscal policies to overcome the deficit in the long run. In this regard, the study:

- reviews the Nigerian tax system since the attainment of political independence in 1960;
- highlights as much as possible the various tax reforms and their underlying objectives: and
- evaluates the productivity of the Nigerian tax system between 1970 and 1991.

We provide in the next section a brief literature review relating to the focus of the study.

# II. Literature review

In an attempt to meet the ever-increasing demands of the populace, governments of developing countries often engage in deficit financing. This arises primarily from the inadequacy of the revenue base to cope with the targeted level of economic activities. There is also the belief that deficit financing can accelerate the pace of economic growth and development. The underlying presumption is that the rate of growth achievable through reliance on public revenue alone would be inadequate for meeting the yearnings and aspirations of the populace. It is this general trend that accounts for the persistence of the huge fiscal deficit that have now become a permanent feature of Nigerian fiscal policy (Ariyo and Raheem, 1990). In addition, Ariyo and Raheem (1991) indicate that this fiscal stance has generated mixed effects on several macroeconomic aggregates.

Of greater concern, however, are the findings of a study reported by Ariyo and Raheem (1990) that shows that the level of fiscal deficit in Nigeria is no longer sustainable, given the identified lack of cointegration between its revenue and expenditure profiles. Ariyo (1993) also used the litmus test developed by Zee (1988), Blinder and Solow (1973), and Buiter (1983), and modified by Rutayasire (1990), to assess the sustainability of the Nigerian fiscal deficit between 1970 and 1990. The findings, reported in Table 2,[1] indicate that the fiscal deficit profile in Nigeria has become non-sustainable since 1980. They also provide policy relevant information about the causes, structure and severity of the deficit problem. Available evidence indicates that this deficit-prone policy orientation continues unabated.

**Table 2: Sustainability of Nigerian fiscal deficit: 1970—1990 (₦ millions)**

| Item | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TR** | 365.7 | 838.0 | 1,074.1 | 1,388.0 | 3,894.3 | 4,474.7 | 5,623.1 | 6,466.5 | 6,131.1 | 8,868.4 | 12,139 |
| + nB | 228.2 | - | - | - | - | 67.44 | 284.1 | 161.8 | 221.9 | - | 105 |
| Subtotal | 593.9 | 838.0 | 1,073.1 | 1,388.0 | 3,894.3 | 4,542.1 | 5,907.2 | 6,628.3 | 6,353.0 | 8,868.4 | 12,034 |
| Less (G - C) | 638.3 | 492.9 | 681.4 | 656.2 | 874.0 | 1,695.0 | 2,672.5 | 2,348.1 | 3,427.8 | 3,187.2 | (6,022) |
| Subtotal (NW) | (44.4) | 345.1 | 392.7 | 731.8 | 3,020.3 | 2,847.1 | 3,234.7 | 4,280.2 | 2,925.2 | 5,681.2 | 6,012 |
| Less Di | 1,040 | 1,070 | 1,000.7 | 1,061.2 | 1,266.6 | 1,678.9 | 2,630.9 | 4,636.0 | 5,983.1 | 7,282.3 | 8,218 |
| Subtotal | (1,084.4) | (728.9) | (608) | (329.4) | 1,753.7 | 1,168.2 | 603.8 | (355.8) | (3,057.9) | (1601.1) | 2,206 |
| Add net external asset | 1.3 | 125.1 | 7.2 | 161.2 | 3,218.5 | 3,346.5 | 3,112.9 | 2,668.8 | 135.1 | 1,639.3 | 3,788 |
| Overall balance* | (1,083.2) | (603.8) | (600.8) | (168.2) | 4,972.2 | 4,514.7 | 3,716.7 | 2,313.0 | 2,922.8 | 38.2 | 5,956 |

| Item | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|---|---|---|---|---|---|
| TR** | 7,068 | 7490 | 6,272 | 6,939 | 9,640 | 7,969 | 16,129 | 15,589 | 277,815 | 39,500 |
| + nB | 148 | 98 | (336) | (104) | 155 | (176) | 471 | 486 | 1,044 | 1,993 |
| Subtotal | 7,216 | 7,568 | 5,936 | 6,835 | 9,795 | 7,793 | 16,600 | 16,075 | 28,829 | 41,293 |
| Less (G - C) | (5076) | (5076) | (4,860) | 11,993 | 7,216 | 7,697 | 15,646 | 19,409 | 25,966 | (36,171) |
| Subtotal (NW) | 2,140 | 2,708 | 657 | 5,158 | 2,589 | 96 | 954 | 3,334 | 2,864 | 5,122 |
| Less Di | 11,446 | 14,847 | 22,224 | 25,675 | 27,952 | 28,291 | 36,790 | 46,789 | (54,555.8) | (84,100) |
| Subtotal | 9,306 | (12,139) | (21,567) | (30,833) | (24,563) | (28,195) | (35,836) | 50,123 | 51,692 | 78,978 |
| Add net external asset | 245 | (1,529) | (7,748) | (10,655) | (12,145) | (36,429) | (77,472) | (100,935) | (256,600.5) | (187,900) |
| Overall balance* | 20,435 | (28,877) | (53,957) | (70,384) | (68,541) | (103,429) | (172,787) | (230,585) | (308,292) | (266,878) |

Source: Ariyo (1993).

Figures in parentheses unsustainable fiscal deficit, i.e., $F_u < 0$.

DEFINITION OF SYMBOLS:

TR = total revenue; n = growth rate of gross domestic product
B = budget deficit; G = total government expenditure; C = total government capital expenditure;
NW= net worth; $D_i$ = total domestic debt.

This problem suggests the need for concrete steps to bring Nigeria's fiscal profile back on course. To achieve this, the country needs to either generate more revenue or reduce the level of expenditure — or embark on an appropriate combination of both. For reasons indicated earlier, this study investigates the revenue enhancement potentials of existing revenue sources, given the current over-dependence on oil revenue and hence the relative neglect of other sources. We also believe that the "ratchet effect" syndrome precludes a significant reduction in the aggregate level of expenditure in the near future.

As a means of meeting their expenditure requirements, many developing countries undertook tax reforms in the 1980s. However, most of these reforms focused on tax structure rather than on tax administration geared towards generating more revenue from existing tax sources (Osoro, 1991). The situation was even of a wider dimension in Nigeria. Before the advent of oil in 1971, revenue from the traditional sources such as tax on export products like cocoa, groundnut and palm kernel provided adequate revenue for the needs of the public sector. In addition, most people outside the tax net used to pay the poll tax. Following the oil boom, however, the little attention was paid to these non-oil revenue sources. Consequently, there arose an over-dependence on oil revenue as the anchor for public expenditure programming. Table 3 shows, for example, that the relative contribution of oil revenue increased from 18.9% in 1970 to 80.7% in 1974, rising further to 82.2% in 1989. Given the fragile nature of the oil market, the country's revenue profile has been subjected to wide fluctuations over the years. This, in addition to over-ambitious expenditure programmes resulted in episodic jumps in the country's budget deficits.

Successive governments have expressed concern about the low level of productivity of the Nigerian tax system. This has been attributed largely to the deficiencies in the tax administration and collection system, complex legislation, and apathy, especially on the part of those outside the tax net (Ijewere, 1991; Ndekwu, 1991). In 1991, the FGN set up a study group on the Nigerian tax system management and administration. A behavioural explanation for this fiscal stance had been elaborated upon by Olopoenia (1991) in his discussion of the impact of a sudden surge in oil revenue in the context of the "Dutch disease syndrome" (Corden and Neary, 1982; Herberger, 1983). He explained how the confidence of wealth effect influences government's expenditures and non-oil revenue efforts. With respect to the latter, he indicated that the government may want to pass on some of its oil revenues to the private sector indirectly in the form of lower non-oil tax rate and levels.

Aghevli and Sassanpour (1982) and Veez-Zedeh (1989) also note that the level of non-oil revenue is influenced by the level of economic activity in the non-oil sector as well as by the oil wealth effect. Specifically, the extent to which the government withdraws resources from the non-oil sector may depend on its perception of the oil wealth. If oil wealth is perceived to be permanent, there may be a desire by government to transfer some of the wealth to the private non-oil sector through a reduction in non-oil tax burden. This orientation negatively affects the productivity of the non-oil tax sources in particular and the tax system in general. However, there is paucity of comprehensive research on the productivity of the Nigerian tax system. Rather, most research has focused only on a single aspect of the tax sources. For example, Idachaba (1976) assessed the tax-to-base

elasticities of import and export duties in terms of total imports and exports. Similarly, Diejomaoh (1976) estimated the income elasticities of import volume over the period 1954—1964.

**Table 3: Structural changes in federal tax sources, 1970—1989 (percent)** (₦ million)

| | Oil | | | Non-oil | | | | |
|---|---|---|---|---|---|---|---|---|
| | PPT | Others | Total | Cit | Duties | Others | Total | Grand total |
| 1970 | 18.9 | - | 18.9 | 8.9 | 71.9 | 0.3 | 81.1 | 100.0 |
| 1971 | 40.7 | - | 40.7 | 6.7 | 52.1 | 0.5 | 59.3 | 100.0 |
| 1972 | 49.9 | - | 49.9 | 7.3 | 42.3 | 0.5 | 50.1 | 100.0 |
| 1973 | 56.9 | - | 56.9 | 4.8 | 37.6 | 0.7 | 43.1 | 100.0 |
| 1974 | 80.7 | - | 80.7 | 4.5 | 14.4 | 0.4 | 19.3 | 100.0 |
| 1975 | 72.3 | - | 72.3 | 6.9 | 20.3 | 0.5 | 27.7 | 100.0 |
| 1976 | 75.6 | - | 75.6 | 5.7 | 18.6 | 0.1 | 24.4 | 100.0 |
| 1977 | 72.4 | - | 72.4 | 7.9 | 19.1 | 0.6 | 27.6 | 100.0 |
| 1978 | 60.3 | - | 60.3 | 9.3 | 30.0 | 0.4 | 39.7 | 100.0 |
| 1979 | 74.7 | - | 74.7 | 8.4 | 16.6 | 0.3 | 25.3 | 100.0 |
| 1980 | 78.0 | - | 78.0 | 5.3 | 16.5 | 0.2 | 22.0 | 100.0 |
| 1981 | 68.8 | - | 68.8 | 5.5 | 23.5 | 0.4 | 31.2 | 100.0 |
| 1982 | 66.1 | - | 66.1 | 1.6 | 32.0 | 0.3 | 33.9 | 100.0 |
| 1983 | 59.7 | - | 59.7 | 8.9 | 31.0 | 0.4 | 40.3 | 100.0 |
| 1984 | 67.0 | - | 67.0 | 8.4 | 24.3 | 0.3 | 33.0 | 100.0 |
| 1985 | 45.9 | 28.8 | 74.7 | 7.2 | 14.1 | 4.0 | 25.3 | 100.0 |
| 1986 | 39.1 | 36.8 | 75.9 | 9.0 | 14.0 | 1.1 | 24.1 | 100.0 |
| 1987 | 49.8 | 26.0 | 75.8 | 5.0 | 14.1 | 5.1 | 24.2 | 100.0 |
| 1988 | 45.8 | 30.9 | 76.7 | 5.8 | 15.6 | 1.9 | 23.3 | 100.0 |
| 1989 | 48.7 | 34.1 | 82.2 | 4.0 | 11.8 | 2.0 | 17.8 | 100.0 |

Source: Ndekwu (1991).

PPT = petroleum profits tax
CIT = company income tax

Omoruyi (1983) so far represents the most comprehensive assessment of the productivity of the Nigeria tax system. He evaluated the buoyancy of the tax system as defined by Sahota (1961) and Ghai (1966) for the period 1960 to 1979. He focused on both the indirect taxes such as import, export and excise duties, as well as direct taxes such as personal income tax (federally collected) and petroleum profit tax. Our study improves upon Omoruyi (1983) in the following respects. First, this study covers the period 1960—1990. We therefore update the analysis. Second, our study captures the impact of the structural changes in the macroeconomic management framework introduced since 1966. Third, Omoruyi (1983) disaggregated his analysis in terms of decades (1960—1967, 1970—1980, etc.). We believe that such disaggregation could not provide an adequate guide for policy decisions, which are of interest to this study. Hence, we disaggregated our analysis around notable economic events such as the pre-and post-oil boom era, as well as the impact of SAP on the buoyancy of Nigeria's tax system.

# III. Nigerian tax system: An overview

## Tax structure: Theoretical issues

A country's tax system is a major determinant of other macroeconomic indexes. Specifically, for both developed and developing economies, there exists a relationship between tax structure and the level of economic growth and development. Indeed, it has been argued that the level of economic development has a very strong impact on a country's tax base (Hinricks, 1966; Musgrave, 1969), and tax policy objectives vary with the stages of development. Similarly, the (economic) criteria by which a tax structure is to be judged and the relative importance of each tax source vary over time (Musgrave, 1969). For example, during the colonial era and immediately after the Nigerian (political) independence in 1960, the sole objective of taxation was to raise revenue. Later on, emphasis shifted to the infant industries protection and income redistribution objectives.

In his discussion of the relationship between tax structure and economic development, Musgrave (1969) divided the period of economic development into two, the early period when an economy is relatively underdeveloped and the later period when the economy is developed. During the early period, there is limited scope for the use of direct taxes because the majority of the populace reside in the rural areas and are engaged in subsistence agriculture. Because their incomes are difficult to estimate, tax assessment at this stage is based on presumptions prone to wide margins of error.

The early period of economic development is, therefore, characterized by the dominance of agricultural taxation, which serves as a proxy for personal income taxation, and in Nigeria the various marketing boards served as effective mechanisms for administering agricultural taxation. Agricultural taxation substituted for personal income tax given the difficulty in reaching individual farmers and the inability to measure their tax liability accurately. Further, the large percentage of self-employment to total employment makes effective personal income tax unworkable (Musgrave, 1969). This problem thereby necessitates the use of the ability-to-pay principle, effectively limiting personal income taxation to the wage income of civil servants and employees of large firms both of which account for an insignificant proportion of the total working population.

During the early period of economic development, direct taxes in form of company income taxes cannot be important because there are few home-based industries. The same principle applies to excise tax (an indirect tax) on locally manufactured goods. Both will increase in relative importance as economic development progresses, however, due to growth or non-static nature of the bases of these taxes. Several retail outlets also make a sales tax system difficult to implement, and a multiple-stage sales tax system

even more so (Musgrave, 1969). Further, the rudimentary nature of the economy precludes retail form of taxes.

At this stage also, taxes are difficult to collect because of the lack of skills and facilities for tax administration (Hinricks, 1966). Given this, a complicated tax structure is not feasible and the amount of revenue from personal income tax will depend on taxpayers' compliance and the efficiency of the tax collector. An important source of government revenue during the early stage of economic development is the foreign trade sector because exports and imports are readily identifiable and they pass through few ports. However, revenue from export and custom duties is not stable because of periodic fluctuations in the prices of primary products. This tends to complicate plan implementation in many developing countries (Massel et al., 1972).

Economic development brings with it an increase in the share of direct taxes in total revenue. This is consistent with the experience of developed economies in which direct trades yield more revenue than indirect taxes. For example, personal income tax becomes important as the share of employment in the industrial sector increases. Also, as the dominance of the agricultural sector decreases, sales tax may be broadened because a great deal of output and income will go through the formal market as the economy becomes more monetized. Musgrave (1969) noted that at this stage, taxes may be imposed on firms or individuals, on expenditures or receipts, and on factor inputs or products, among others. He further argued that there would be a tendency to shift from indirect to direct taxes. His theory relates to a normal development process, however. It does not consider a situation where the sudden emergence of an oil boom provides an unanticipated source of huge revenue. Hence, this stereotype may not be applicable to an oil-based economy like Nigeria. Nevertheless, the theory still represents a benchmark against which country-specific empirical evidence may be compared.

Our study therefore enables us to assess the extent to which the Nigerian tax system conforms with this scenario. If applicable, such a characterization will enhance accurate tax revenue projection and targeting of specific tax revenue sources given an ascertained profile of economic development. It will also assist in estimating a sustainable revenue profile thereby facilitating effective management of a country's fiscal policy, among others.

## Structure of tax-based revenue in Nigeria

This section presents a brief review of Nigeria's tax-based revenue profile since 1960. The analysis will throw light on the shifts in the relative importance of each revenue source over time and the extent to which the Nigerian tax-revenue profile conforms with Musgrave's theory. The overall picture is shown in Table 4. In the 1960s, emphasis was on accelerated economic growth and development, and the main goal of tax policy was maximum revenue generation to finance public sector programmes. Similarly, policy makers emphasized import substitution to underlie the industrial development strategy (Ekuarhare, 1980). Attention was directed toward increasing the existing tax rates (especially import duties) in the form of high protective tariffs, and as a consequence

import duties provided the bulk of federal government revenue in the early 1960s (Phillips, 1991).

**Table 4: Structure of Nigerian tax-based revenue: 1960—1990** (₦ million)

| Year | (A) Total government tax revenue (GTR) | (B) Import duties (ED) | (C) Excise duties (ID) | (D) Petroleum profit tax (PPT) | (E) Company income tax (CIT) | (F) Gross domestic product (GDP) |
|---|---|---|---|---|---|---|
| 1960 | 165.6 | 109.6 | 12.0 | 0.5 | 8.9 | 2,245 |
| 1961 | 171.1 | 114.0 | 13.4 | 0.5 | 11.9 | 2,373 |
| 1962 | 174.9 | 121.9 | 14.1 | 0.5 | 11.4 | 2,791 |
| 1963 | 186.6 | 123.9 | 19.4 | 0.5 | 10.8 | 2,946 |
| 1964 | 240.9 | 151.2 | 24.2 | 0.5 | 9.6 | 3,145 |
| 1965 | 267.6 | 169.2 | 33.2 | 0.5 | 13.0 | 3,361 |
| 1966 | 250.2 | 116.8 | 67.4 | 0.5 | 16.8 | 3,614 |
| 1967 | 234.0 | 109.0 | 60.2 | 0.5 | 22.4 | 2,950 |
| 1968 | 230.0 | 109.6 | 49.0 | 0.5 | 27.6 | 2,879 |
| 1969 | 305.0 | 151.6 | 72.0 | 9.8 | 33.2 | 3,792 |
| 1970 | 513.9 | 215.5 | 112.6 | 97.7 | 45.8 | 5,621 |
| 1971 | 942.1 | 284.8 | 168.5 | 383.1 | 67.5 | 7,098 |
| 1972 | 1,105.5 | 274.4 | 179.8 | 540.5 | 80.4 | 27,703 |
| 1973 | 1,369.1 | 307.9 | 196.0 | 769.2 | 80.8 | 10,991 |
| 1974 | 3,530.8 | 328.3 | 164.4 | 2,870.1 | 148.8 | 18,881 |
| 1975 | 3,750.9 | 629.4 | 125.5 | 2,707.5 | 261.9 | 21,779 |
| 1976 | 4,735.2 | 724.3 | 152.4 | 3,624.9 | 222.2 | 27,572 |
| 1977 | 5,981.6 | 902.2 | 236.0 | 4,330.7 | 476.8 | 32,520 |
| 1978 | 5,660.6 | 1,436.3 | 259.2 | 3,415.7 | 527.4 | 35,540 |
| 1979 | 6,897.6 | 870.6 | 273.1 | 5,164.1 | 575.1 | 43,151 |
| 1980 | 10,974.6 | 1,407.2 | 406.2 | 8,564.3 | 579.2 | 49,755 |
| 1981 | 9,362.8 | 1,880.9 | 654.6 | 6,325.8 | 483.0 | 52,255 |
| 1982 | 8,090.7 | 1,801.7 | 680.7 | 4,846.4 | 734.0 | 53,679 |
| 1983 | 6,316.1 | 1,114.8 | 869.3 | 3,746.9 | 561.5 | 552,760 |
| 1984 | 7,197.0 | 924.0 | 690.8 | 4,761.4 | 787.2 | 55,676 |
| 1985 | 9.973.3 | 1,199.0 | 978.9 | 6,711.0 | 1,004.3 | 65,467 |
| 1986 | 8,227.8 | 1,298.7 | 1,041.4 | 4,811.1 | 1,019.3 | 82,929 |
| 1987 | 17,315.9 | 2,722.9 | 814.4 | 12,504.0 | 1,235.2 | 107,040 |
| 1988 | 18,354.6 | 3,283.4 | 980.7 | 12,496.5 | 1,572.4 | 138,081 |
| 1989 | 32,110.4 | 4,581.7 | 1,368.5 | 24,161.7 | 1,977.42 | 258,212 |
| 1990 | 50,200.0 | 6,717.9 | 2,006.7 | 26,909.0 | 3,408.70 | 480,275 |

Source: Central Bank of Nigeria, Annual Report and Statement of Accounts (various issues).

Another major macroeconomic objective underlying the increase in tariffs was the desire to discourage imports and thereby curtail consumer demand. Excise duties were also introduced on several goods to broaden the revenue base. Given the low industrial base, the contribution of the latter was insignificant. Overall, as shown in Table 3, revenue from these sources accounted for about 73% of total revenue. This makes the foreign trade sector the major source of revenue in the 1960s. Some structural changes emerged

in the revenue profile in the early 1970s whereby indirect taxes gave way to direct taxes with the emergence of the oil boom (Egwakhide, 1988). The fall in non-oil tax revenue due to the neglect of the traditional (agricultural) sources was matched by an increase in import duties until 1973. Further, there was an appreciable increase in revenue from excise duties in the 1970s due to the enhanced performance of the industrial sector. This overall picture has been sustained up till now given the dominant role of the oil sector as major source of government revenue.

This scenario appears to conform with Musgrave's (1969) theory to the effect that as an economy develops, more reliance may be placed on direct tax revenue. Some caution is advisable in confirming the relevance of Musgrave's theory to the Nigerian environment, however. We should note that the mere classification of petroleum profits tax and royalties as direct taxes immediately distorts an objective assessment of the relative importance of indirect taxes over time. In fact, a focus on non-oil revenue sources shows that the indirect tax still dominates the old and traditional revenue sources. In effect, we conclude that in reality Musgrave's theory is not applicable to the Nigerian environment for several reasons. For example, the behavioural explanation in the context of Dutch disease noted earlier might have accounted for low efforts on direct non-oil taxes. Similarly, the proceeds of the oil boom were spent largely on massive importation of consumer goods, thus enhancing the income from import duties. Such a policy would have hindered rather than enhanced the pace and level of industrial development in the economy. Nevertheless, documentation of objective evidence relating to this issue awaits in-depth research.

## Nigerian fiscal federalism: Assignment of tax powers

Fiscal federalism refers to the existence in a country of more than one level of government, each with different taxing powers and responsibilities for certain categories of expenditure. Nigeria is a good example of a country operating a federal system of government through three tiers of government: the federal, the state and the local. The present state of Nigeria's fiscal federalism has evolved over time, starting with the Phillipson Commission of 1946. As Ekpo and Ndebbio (1992) note, this evolution has been influenced by economic, political, social and cultural considerations. The present arrangement has also undergone several revisions since the initial report of the Phillipson Commission of 1946. Since then, there have been about eight commissions each revising the reports of their respective predecessors. The last revision exercise was undertaken by The National Revenue Mobilization, Allocation and Fiscal Commission in 1988. For further details about the terms of reference and recommendations of each commission or committee, interested readers are referred to Ekpo and Ndebbio (1992).

One major characteristic of federalism is the constitutional separation of powers among the various levels of government. Drawing upon the reports of the various commissions and revisions to previous constitutions, Section 4 (second schedule) of the 1989 Constitution of the Federal Republic of Nigeria (FGN, 1989b) specified three categories of legislative functions. The first is the exclusive legislative list on which only the federal

government can act. The second is the concurrent legislative list on which both the federal and the state governments can act, and the third comprise residual functions consisting of any matter not included in the above first two lists. Of direct relevance to this study is the assignment of tax powers among the three tiers of government in Nigeria.

In Nigeria, two major factors influence the assignment of tax powers or jurisdiction among the three tiers of government. These are administrative efficiency and fiscal independence. The efficiency criterion requires that a tax be assigned to the level of government that is most capable of administering it as efficiently as possible. Fiscal independence on the other hand requires that each level of government should, as far as possible, be able to raise adequate funds from the revenue sources assigned in order to meet its needs and responsibilities. Very often the efficiency criterion tends to conflict with the principle of fiscal independence. The former entails a great deal of centralization or concentration of tax powers at the higher level of government, due to the limited administrative capacity of lower levels of government. Conversely, the latter requires the devolution of more tax powers to the lower levels of government to match the functions constitutionally assigned to them. In the Nigerian context, the scale has always been tilted in favour of the efficiency criterion.

The first Fiscal Commission in Nigeria (Phillipson, 1946) set very stringent conditions for declaring any revenue source as regional. It required revenue or taxes to be local in character for easy assessment and collection, to be regionally identifiable, and in general to have no implication for national policy. Given such above conditions, very few revenue heads (taxes) could be considered as regional and assignable to either the state or the local government levels. There is also a distinction between the ability to legislate on a particular tax and the ability to collect a particular tax. The two powers can reside with the same level of government or be separated. Available evidence from the current jurisdictional arrangement summarized in Table 5 suggests that both types exist in Nigeria. The table shows that all the major sources of revenue are left solely to the federal government in both respects. These are import duties, excise duties, export duties, mining rents and royalties, petroleum profit tax, and company income tax. This may be attributable to the bias for the efficiency criterion noted earlier.

The principal tax with shared jurisdiction is the personal income tax on which the FGN legislates. In terms of its administration, the FGN collects the personal income tax of armed forces personnel and the judiciary. Each state government administers and collects personal income tax from other categories of residents in its territory. Capital gains tax is also under shared jurisdiction in which the FGN legislates while state governments collect the tax. Given the bias for the efficiency criterion, the state and local governments have jurisdiction over minor, low-yielding revenue sources. For example, state governments have jurisdiction over football pools and other betting taxes, motor vehicle and drivers' license fees, personal income tax (excluding the judiciary and the military), and sales tax. Local governments administer entertainment tax, radio and TV licensing, motor part fees and the potentially buoyant property tax.

**Table 5: Nigeria's major taxes, 1990**

| Types of tax | Jurisdiction | |
|---|---|---|
| | Legislation | Administration and collection |
| 1. Import duties | Federal | Federal |
| 2. Excise duties | Federal | Federal |
| 3. Export duties* | Federal | Federal |
| 4. Mining rents and royalties | Federal | Federal |
| 5. Petroleum profit tax | Federal | Federal |
| 6. Companies income tax | Federal | Federal |
| 7. Personal income tax<br>Armed forces, external affairs officers and<br>Federal Capital Territory | Federal | Federal |
| 8. Capital gains tax | Federal | States |
| 9. Personal income tax | Federal | States |
| 10. License fees on television and wireless radio | Federal | States |
| 11. Stamp duties | Federal | States |
| 12. Estate duties | Federal | States |
| 13. Gift tax | Federal | States |
| 14. Sales or purchase tax | Federal | States |
| 15. Football pools and other betting taxes | States | States |
| 16. Motor vehicle tax and drivers' license fees | States | States |
| 17. Entertainment tax | States | States |
| 18. Land registration and survey fees | States | States |
| 19. Property tax | States | Local |
| 20. Market and trading license and fees | States | Local |

Source: Phillips (1991).

In summary, Table 5 shows that the federal government exercises legislative control over the first 14 tax sources, while the states are in charge of the remaining 6 sources. It is noteworthy that the local government has no legislative power over any revenue source, although it can initiate bylaws subject to the approval of the state government. The FGN also dominates tax administration and collection. For example, it directly collects revenue for the first 7 items, which account for over 80% of total tax-based revenue in the country. The state government is responsible for the collection of revenue for items 8 to 18, which cumulatively account for an insignificant proportion of the total tax-based revenue. The local government controls only two items.

It does appear that administrative efficiency is the overriding criterion guiding the assignment of tax sources to the different tiers of government. Consequently, all the major tax sources have been assigned to the federal government. This observation provides a valuable guide as to the appropriate focus for this study, in two respects. First, it is cost-effective to focus on tax sources that are both legislatively and administratively under the control of the FGN. Second, as will be shown later, only four or five of these sources account for about 80% of total tax-based revenue: these are customs and excise duties, mining and royalties, petroleum profits tax, and companies' income tax. Consequently, the study focuses on these major tax sources. We believe that the findings

emanating from the study are validly generalizable to the Nigerian environment within the context of this study's objectives.

## Tax administration and reforms

Taxation has been in existence even before the amalgamation of Nigeria as a political entity in 1914. Direct taxes, which were first introduced into the northern part of Nigeria, were successfully administered because the citizens were already used to one form of tax or another before the formalization of direct taxes. The effectiveness of the administrative arrangement under the emirate system was the major factor. With the amalgamation of the north and the south in 1914, direct taxation was introduced into the western territory in 1916, and into the eastern provinces around 1927. The enabling laws and regulations were fashioned after those of Britain. (The legislation and nature of administration of each tax source by each tier of government was discussed earlier.)

## Current legal framework

Currently, the legal provisions of the various types of taxes have been codified, although they have been subjected to several revisions. Interested readers are referred to Federal Government of Nigeria (1989a) and Federal Inland Revenue Service (1990) for the latest set of amendments to the tax sources covered in this study. Some of the major pieces of legislation are:

- **The Income Tax Management Tax (1961)** - This act regulates personal income tax throughout the federation. It lays down the procedures for estimating personal income, as well as the various reliefs and allowances to which individuals are entitled. In essence, it explains the basis for personal income tax assessment throughout the country.
- **Companies Income Tax (1979)** - This act prescribes tax assessment and collection procedures for all corporate bodies in the country. Activities relating to crude oil and natural gas are excluded, however; these are covered by a separate act.
- **Capital Gains Tax (CGT) (1967)** - The CGT provides guidelines for the calculation of profits on the sale of fixed assets and shareholding in corporate entities.
- **The Petroleum Profits Tax (PPT) Act (1959)** - This act specifically addresses the operators in the oil industry. It is believed that oil prospecting and the nature of operations of oil producing organizations are uniquely different from the normal operations of other corporate organizations and thus warrant a special provision.

The frequency of amendments to the various acts or decrees makes it very difficult to keep track of the various legislative reforms. The worrisome frequency led interested observers to advise the FGN to ensure the stability of each tax regulation for at least five years. This is meant to encourage purposeful planning and investment decisions especially

by corporate agencies and foreign investors. For the purpose of this study, however, we are interested in the net effect of the legion of reforms on tax yield. Hence, Table 6 summarizes the net effect of the reforms on some selected tax sources. All efforts to secure similar information on customs and excise duties proved abortive.

**Table 6: Tax rates and reliefs**

Personal income tax rates

| | Chargeable income ₦ | Rate % ₦ | Tax ₦ | Cumulative income ₦ | Cumulative tax ₦ |
|---|---|---|---|---|---|
| 1. Table 1 | | | | | |
| 1st | 2,000 | 10 | 200 | 2,000 | 200 |
| Next | 2,000 | 15 | 300 | 4,000 | 500 |
| Next | 2,000 | 20 | 400 | 6,000 | 900 |
| Next | 2,000 | 25 | 500 | 8,000 | 1,400 |
| Next | 2,000 | 30 | 600 | 10,000 | 2,000 |
| Next | 5,000 | 40 | 2,000 | 15,000 | 4,000 |
| Next | 5,000 | 45 | 2,250 | 20,000 | 6,250 |
| Next | 10,000 | 55 | 5,500 | 30,000 | 11,750 |
| | 30,000 | | | | |
| Over | 30,000 | 70 | | | |
| 2. Table 2 | | | | | |
| 1st | 2,000 | 10 | 200 | 2,000 | 200 |
| Next | 2,000 | 15 | 300 | 4,000 | 500 |
| Next | 2,000 | 20 | 400 | 6,000 | 900 |
| Next | 2,000 | 25 | 500 | 8,000 | 1,400 |
| Next | 2,000 | 30 | 600 | 10,000 | 2,000 |
| Next | 5,000 | 35 | 1,750 | 15,000 | 3,750 |
| Next | 5,000 | 40 | 2,000 | 20,000 | 5,750 |
| Next | 10,000 | 45 | 4,500 | 30,000 | 10,250 |
| Next | 10,000 | 50 | 5.000 | 40,000 | 15,250 |
| | 40,000 | | | | |
| Over | 40,000 | 55 | | | |

1. -Applicable 1 April 1977 — 31 December 1986.
2. -Applicable 1 January 1987 - Date.

**Capital allowances rates per centrum**

| | Initial | Annual |
|---|---|---|
| 1 April 1975 — 31 December 1984 | | |
| Qualifying building expenditure | 5 | 10 |
| Qualifying industrial building expenditure | 15 | 10 |
| Qualifying mining expenditure | 20 | 12.5 |
| Qualifying plant expenditure | 20 | 12.5 |
| Qualifying plantation expenditure | 25 | 15 |

**Table 6: Contd.**

| | | |
|---|---|---|
| 1 January 1985 — 31 December 1986 | | |
| Qualifying building expenditure | 5 | 10 |
| Qualifying industrial building expenditure | 15 | 10 |
| Qualifying mining expenditure | 20 | 10 |
| Qualifying plant expenditure | 20 | 10 |
| Qualifying motor vehicle expenditure | 20 | 25 |
| Qualifying plantation equipment expenditure | 20 | 33.3 |
| Qualifying ranching and plantation expenditure | 25 | 15 |
| Qualifying housing estate expenditure | 20 | 10 |
| 1 January 1987 — Date | | |
| Qualifying building expenditure | 5 | 10 |
| Qualifying industrial building expenditure | 15 | 10 |
| Qualifying mining expenditure | 20 | 10 |
| Qualifying plant expenditure (excluding furniture and fittings) | 20 | 10 |
| Qualifying furniture and fittings expenditure | 15 | 10 |
| Qualifying motor vehicle expenditure | 25 | 20 |
| Qualifying plantation equipment expenditure | 20 | 33.3 |
| Qualifying housing estate expenditure | 20 | 10 |
| Qualifying ranching and plantation expenditure | 25 | 15 |
| Qualifying research and development expenditure | 25 | 12.5 |

## Capital transfer tax rates

The capital transfer tax are assessed according to the following scale:

| | Net value of the estate or property transferred ₦ | Rate of capital transfer tax ₦ |
|---|---|---|
| First | 100,000 | Nil |
| Next | 150,000 | 10% |
| Next | 150,000 | 20% |
| Next | 250,000 | 30% |
| Next | 500,000 | 40% |
| Next | 1,000,000 | 50% |
| Thereafter | | 60% |

### Companies income tax rates

| | Tax rate |
|---|---|
| 1 April 1979 — December 31 1986 | 45% |
| 1 January 1987 — Date | 40% |

1 January 1988 — Date

Small and medium-sized companies (turnover of ₦500,000 and below) engaged in manufacturing, agricultural production and mining of solid minerals are assessed at the

**Table 6: Contd.**

rate of 20% for three years from commencement of business. Existing companies in same category are also entitled to the same relief effective from 1 January 1988 for three years, i.e., 1988, 1989 and 1990.

Capital gains tax rate

| | Tax rate |
|---|---|
| 1 April, 1967 - Date | 20% |

Personal income tax allowances and reliefs

Up to 31 December 1984

Personal allowance

| Earned income level ₦ | | Allowance ₦ | |
|---|---|---|---|
| 0 - 2,500 | | 600 | |
| Above 2,500 | Higher of | 1,200 | or |
| | | 10% of earned income plus ₦ 600 | |
| Wife allowance | | 300 | |
| Children allowance | | 250 | per child up to maximum of four children |
| Dependent relative relief | | 400 | |
| Life assurance relief | | 2,000 | maximum |

1 January 1985 — 31 December 1986

Personal allowance

| Earned income level ₦ | Allowance ₦ | |
|---|---|---|
| 0 — 6,000 | 1,200 | |
| Over 6,000 | 1,200 | plus 12.5% of excess of earned income over 6,000 |
| Wife allowance | 300 | |
| Children allowance | 250 | per child up to maximum of four children |
| Dependent relative relief | 400 | |
| Life assurance relief | 2,000 | maximum |

1 January 1987 — Date

| | | |
|---|---|---|
| Personal allowance | 1,000 | plus 12.5% of earned income |
| Wife allowance | 500 | |
| Children allowance | 450 | per child up to maximum of four children |

**Table 6: Contd.**

| | | |
|---|---|---|
| Dependent relative relief | 600 | |
| Life assurance relief | 2,000 | maximum |
| Cost of equity holding in a research and development company | | |
| Donations to research and development centre or institution | | |

Source: Federal Inland Revenue Service (1990).

The quality of information currently available on tax reforms is constraining in at least two respects. First, it is not possible to assess objectively the net effect of tax burden over time. We do note, however, government's stated intention to move towards a lower tax regime especially on company income tax. Nevertheless, an objective determination of the net effect of these tax-rule changes and reforms still awaits in-depth research. Second, it is not possible to separate discretionary from non-discretionary tax changes. The information shown in Table 6 merely covers some specific periods without any information about the underlying reasons for the changes. Also, the observed stability in tax rates is more apparent than real given the frequent changes experienced in practice. A more comprehensive and up-to-date codification of these changes and their underlying causes would be highly desirable to facilitate applied research on the impact of tax policies on the Nigerian economy.

# IV. Measures of productivity

In evaluating the productivity of a tax system, two measures are normally considered. These are the (income) elasticity and the buoyancy of tax revenue (Asher, 1989; Osoro, 1991). The former measures the change in tax revenue attributable to changes in income. The latter refers to changes in tax revenue due to changes not only in income but also other discretionary changes in tax policy. The various methods for deriving these measures and the required modifications to the underlying data have been elaborated upon by Prest (1962) and Singer (1968). They have also been adapted by several researchers, including Mansfield (1972), Rao (1979) and Osoro (1991).

As Osoro (1991) indicates, buoyancy can be measured by the following equation:

$$TR = aY^b e_r \quad (1)$$

where *TR* is total tax revenue, *Y* is the gross domestic product (GDP) at current prices, and $e_r$ is the error term. A log-transform of Equation 1 enables us to derive the elasticity coefficient. This is represented as:

$$\log TR = log\ a + b_{log}\ Y + e_r \quad (2)$$

whereby *b* provides an estimate of tax buoyancy. It measures in percentage terms the change in total tax revenue due to a change in GDP and the effect of discretionary changes in tax policy.

To measure elasticity, it is necessary to isolate the effect of discretionary changes in tax policy on tax revenue. Two approaches have been suggested for the exercise. One method suggested by Prest (1962) involves isolating the data on discretionary revenue changes based on data provided by the Treasury Department of the government.

Mansfield (1972) describes this approach as follows:

| | |
|---|---|
| $T_1, T_2, ....$ | $T_n$ are actual tax yields for a number of years |
| $D_1, D_2, ....$ | $D_n$ measures the effect of a discretionary tax change in the $i^{th}$ year on the $j^{th}$ year's revenue outturn |
| $T_{ij}$ | indicates the $j^{th}$ year's actual tax yield adjusted to the tax structure that existed in year i |

Let $i = 1$ represent the reference year. Hence, the series $t_{11}, T_{12}, T_{13} .... T_{in}$ depict the tax receipts attainable if the tax structure remained unchanged, coupled with the removal of

the effect of all discretionary changes introduced over the period following year 1.

At least two problems are associated with this approach. First, there may be no data on revenue receipts directly and strictly attributable to discretionary changes in tax policy. Second, the approach assumes that the discretionary changes are as progressive as the underlying tax structure. This assumption is not likely to hold. Third, the approach is highly aggregative, whereas, other methods that decompose the elements of productivity measurement and thereby provide a better insight into how each component affects the overall productivity of a tax system.

This approach, which was used earlier by Omoruyi (1983), shows that elasticity can be measured as:

$$\Delta T/\Delta Y \; x \; Y/T \tag{4}$$

and for any given tax, *K*, by

$$\Delta T_K/\Delta Y \; x \; Y/T_K \tag{5}$$

where $T_K$, the tax revenue, includes discretionary changes in the tax base and rate schedule and *Y* refers to GDP at current prices.

The income elasticity of a given tax represented by Equation 4 can be decomposed into two elements: the elasticity of the tax to the base and the elasticity of the base to income. In other words, Equation 2 is decomposable into tax-to-base elasticity:

$$\Delta T_K/\Delta B_K \; x \; B_K/T_K \tag{6}$$

and into base-to-income elasticity

$$\Delta B_K/\Delta Y \; x \; Y/B_K \tag{7}$$

The relationship is expressed in the following identity:

$$\Delta T_K/\Delta Y \; x \; Y/T_K = [\Delta T_K/\Delta B_K \; x \; B_K/T_K] \; [\Delta B_K/\Delta Y \; x \; Y/B_K] \tag{8}$$

It decomposes any tax system as the product of elasticity of tax-to-base and of base-to-income. One potential hindrance to the use of this method is the non-availability of required data. This is the problem that compelled Omoruyi (1983) into adopting an aggregative measure of tax buoyancy for Nigeria.

These problems gave rise to a consideration of another technique suggested by Singer (1968). Usually referred to as the dummy variable technique (DVT), it introduces a dummy variable into Equation 2 for each year in which there was an exogenous tax policy change. The resulting model is:

$$log \; T_R = a_0 + a_1 \; log \; Y + \sum_i D_i + e_r \tag{9}$$

where $D_i$ *(i = 1, 2)* takes a value of 1 for each year in which there is an exogenous change in tax policy and a value of zero (0) otherwise. According to Singer, a potential major problem with this approach relates to inadequate number of observations when exogenous tax policy changes are too frequent.

# V. Methodology

## Data constraints

We observe from the discussion above that paucity of required data restricts the choice of options among the eligible productivity evaluation models. We are not immune to this problem, hence as in previous studies, our analysis is severely limited by non-availability of required data. In particular, efforts to identify the major tax reforms or discretionary tax policies did not yield fruitful results. Further, information available suggests that adjustments to existing tax rates and reliefs are usually influenced by group pressures. It therefore appears that many tax reforms are not anchored on any identifiable macroeconomic or widely-based public policy objective.

Efforts were also made to quantify the net effect of tax reforms on tax yield. This also proved an impossible task, given the absence of a benchmark for classifying any change as significant or otherwise. Discussions with some top officials of the Federal Inland Revenue Service (FIRS) did not help matters, since they were unable to suggest a materiality threshold for assessing the net effect of any tax reform. Consequently, we could not distinguish between (1) exogenous and non-exogenous tax policies, or (2) major versus minor tax changes, and the study could not use the various measures of productivity of the tax system. We therefore assessed the buoyancy of the Nigerian tax system as a whole and of the various tax sources for the period covered by the study.

## Research design

Environmental considerations suggest the desirability of isolating the impact of some attribute variables (significant events) on the productivity of the Nigerian tax system. Two attribute variables appear relevant to this study. In the first instance, we performed a time series analysis of the relationship between gross domestic product (GDP) and the yield of aggregate tax-based revenue, as well as by each tax source, over the 1970—1990 period. This provides an index of the buoyancy of the tax system as a whole and for each tax source.

Second, the oil boom would have affected the productivity of the tax system in view of the behavioural explanation discussed earlier in the context of the Dutch disease syndrome. Hence, a priori, the oil boom is expected to affect negatively the yield from non-oil tax sources. The extent of this effect, however, depends upon the perception of policy makers regarding the permanence or otherwise of the oil wealth. Third, the FGN

commenced the implementation of a SAP in 1986 that amounted to a significant structural change in the macroeconomic management framework for the country. One of the core objectives of the SAP is to enhance the degree of self-reliance within the economy. Of equal importance is the need to diversify the country's revenue base in order to minimize the extent of dependence on oil as the major source of revenue. All these have potential implications for the yield of non-oil tax revenue sources. For example, one major consequence of SAP is the rekindled interest in export of cash crops such as cocoa. Ordinarily, this should have resulted in a significant upsurge in revenue from export duties, but as part of the reform the FGN scrapped export duties as an element of the package of incentives meant to promote exports.

There were significant downward revisions in tax rates and import tariffs as well. The corporate tax rate was reduced from 45% to 40% in 1987 in order to encourage re-investment activities by existing organizations and to encourage new investments. Similarly, import duties on certain categories of imports were reviewed. Among these were the elimination of duties on trucks and commercial vehicles to ease the transportation problem in the country. Also, duty exemptions were granted on items required on some public sector projects. Generous tariff concessions were also allowed on machinery and raw materials that could not be sourced locally, at least not in the short run.

Several policies having implications for the yield of specific tax sources were also initiated to mitigate the negative effects of SAP on the populace. For example, tax reliefs and allowances were granted on personal income tax to enhance the real income of workers, although this particular tax source is not covered in this study for reasons stated earlier. The introduction of SAP generated several changes in tax-related policies, so that any growth in GDP during this period might not necessarily translate into higher tax yield. The determination of the net effect is therefore an empirical question.

The analysis was arranged to highlight developments during each of the following periods:

- 1970–1991, for an overall trend analysis
- 1960–1973 vs. 1974–1991, with the introduction of (0, 1) dummy variable respectively to separate the pre-oil boom period from the post-oil boom era
- 1960–1985 vs. 1986-1991, also with the use of (0, 1) dummy variable to demarcate the pre- and post-SAP period.

In addition, we disaggregated the analysis as much as possible for a number of reasons. For example, we are aware of the dominance of the oil sector on total government revenue, and its inclusion in the GDP may distort developments in the non-oil sector. Consequently, we also regressed non-oil government revenue against non-oil GDP. This modification based on non-oil GDP was extended to excise duties since we have no authentic data on the relevant tax base such as total value of production or manufacturing activities. The same applies to company income tax, because we had no reliable data on corporate profits. Since this constraint does not apply to imports and sales of petroleum oil, we regressed import duties against imports, while oil revenue was regressed against reported

oil sales.

## The equations

Given earlier discussions and data availability, we analyzed the following basic equations:

$$\begin{aligned}
\log GTR &= a_0 + a_1 \log GDP && \text{(i)} \\
\log NOR &= b_0 + b_1 \log NGDP && \text{(ii)} \\
\log IMD &= b_0 + b_1 \log GDP && \text{(iii)} \\
\log IMD &= d_0 + d_1 \log IMP && \text{(iv)} \\
\log ED &= e_0 + e_1 \log GDP && \text{(v)} \\
\log ED &= f_0 - f_1 \log NGDP && \text{(vi)} \\
\log PPT &= g_0 + g_1 \log GDP && \text{(vii)} \\
\log PPT &= h_0 + h_1 \log TOS && \text{(viii)} \\
\log CIT &= i_0 + i_1 \log GDP && \text{(ix)} \\
\log CIT &= j_0 - j_1 \log NGDP && \text{(x)}
\end{aligned} \qquad (10)$$

where

| | | |
|---|---|---|
| *GTR* | = | total tax revenue |
| *NOR* | = | total non-oil revenue |
| *IMD* | = | import duties |
| *IMP* | = | total imports |
| *ED* | = | excise duties |
| *PPT* | = | petroleum profit tax |
| *TOS* | = | total oil sales |
| *CIT* | = | company income tax |
| *GDP* | = | gross domestic product |
| *NGDP* | = | non-oil gross domestic product |
| *NOR* | = | non-oil total revenue |

Slope dummy equations were used for the oil boom and SAP. The literature indicates that over long periods of time or under unusual circumstances (like the oil boom and SAP in Nigeria), not only do the functions (intercept) change but also their slopes may well be expected to change (Koutsoyiannis, 1976; Wonnacott and Wonnacott, 1970). We believe this situation might have applied to the Nigerian situation for both the oil boom and SAP. However, the empirical evidence relating to this will be more reassuring, hence the desirability of using the slope dummy function for our analysis.

We use the GTR equation to demonstrate the difference between the shift (intercept) and the slope dummy functions. For example, the shift (intercept) dummy variable function is represented by:

$$\log GTR = a_0 + a_1 \log GDP + a_2 D_1$$

where D is the dummy variable taking on values (0, 1).

To derive the slope dummy function, we introduce a second dummy variable $D_2$ equal to the product of the explanatory variable and the first dummy $D_1$. Using total government revenue as an example, we use the slope dummy variable equation as follows:

$$\log GTR = a_0 + a_1 \log GDP + a_2 D_1 + a_3 D_2 \quad (12)$$

where $D_2 = D_1 \times GDP$. This function was applied to SAP and oil boom variables for all the equations.

Additional modifications were made to the preceding equations to enable us reasonably to capture the budgetary process in Nigeria as it relates to each of the revenue sources. In practice, policy proposals in the annual budget are based on the performance of each revenue source in the preceding period. For example, revenue sources that performed above expectation in the out-going fiscal year are given more ambitious targets in the new fiscal year, and are put under greater surveillance. This practice became prevalent with the steady decline in oil revenue.

Administrative lag is another major factor. New policy guidelines announced in the budget speech may not be implemented until the relevant circulars are issued. It may take up to six months, however, from budget announcement before the content of such circulars are implemented. This scenario applies particularly to customs and excise duties. For company taxation, most companies do not discharge their tax liabilities until long after the annual general meeting. To capture the potential effects of these issues, a one-year lag of the explanatory variable was added to each equation. This will show not only the relevance of this lagged value, but also its relative influence compared with current year's values. If there are pronounced administrative lags or delayed remittances, for example, the lagged value will be more significantly associated with the dependent variable in each equation.

Hence, the following represent the final equations used for non-dummy and dummy-based scenarios:

$$\log GTR_t = a_0 + a_1 \log GDP_t + a_2 \log GDP_{t-1} \quad (13)$$

$$\log GTR_t = a_0 + a_1 \log GDP + a_2 \log GDP_{t-1} + a_3 D_1 + a_4 D_2 \quad (14)$$

This is consistent with the logarithmic autoregressive model suggested by Pindyck and Rubinfeld (1981).

# VI. Results of data analysis

Table 7 reports the derived productivity indexes for overall and individual revenue sources for the period 1970 to 1991. We observe that across the board, the F-values are significant at the 95% confidence level. Further, the adjusted coefficients of determination ($R^2$) show that the explanatory variables adequately explain the pattern of behaviour of each dependent variable. The results also indicate low elasticity indexes for many of the tax sources, relative to their respective tax bases. For example, column 3 of the table indicates that five out of the ten equations (50%) had elasticity indexes of less than 0.30, while eight out of ten (80%) had elasticity indexes of less than 0.50. One equation had an index of 0.722 and another had an elasticity of 2.63. Surprisingly, PPT recorded a negative elasticity coefficient in relation to the GDP. All the indexes were significant at the 95% confidence level.

**Table 7: Productivity of Nigerian tax system (1970—1990)**

| Equation | Constant | Elasticity coefficient | Elasticity coefficient lagged values | F-statistics | $R^2$ | DW | SER |
|---|---|---|---|---|---|---|---|
| 1 | -1.609 | 0.479 | 0.611 | 729 | 0.980 | 1.998 | 0.251 |
| | (2.869) | (3.312) | (4.952) | | | | |
| 2 | -0.830 | 2.63 | 0.771 | 442.29 | 0.968 | 1.571 | 0.237 |
| | (1.812) | (1.549) | (4.084) | | | | |
| 3 | -0.883 | 0.387 | 0.547 | 310.68 | 0.955 | 2.038 | 0.263 |
| | (2.235) | (3.001) | (3.365) | | | | |
| 4 | -0.250 | 0.722 | 0.142 | 832.46 | 0.983 | 1.198 | 0.163 |
| | (1.528) | (8.189) | (1.292) | | | | |
| 5 | -0.458 | 0.155 | 0.824 | 489.67 | 0.971 | 1.721 | 0.243 |
| | (0.963) | (1.702) | (8.778) | | | | |
| 6 | -0.596 | 0.175 | 0.817 | 489.15 | 0.971 | 1.724 | 0.244 |
| | (1.073) | (1.693) | (8.337) | | | | |
| 7 | 0.627 | -0.013 | 0.974 | 415.47 | 0.966 | 1.162 | 0.768 |
| | (0.273) | (0.046) | (9.802) | | | | |
| 8 | -1.476 | 0.457 | 0.698 | 530.47 | 0.973 | 0.965 | 0.682 |
| | (1.919) | (2.691) | (6.611) | | | | |
| 9 | -1.427 | 0.272 | 0.784 | 868.24 | 0.984 | 2.204 | 0.237 |
| | (1.774) | (2.635) | (7.159) | | | | |
| 10 | -1.134 | 0.217 | 0.842 | 806.85 | 0.982 | 2.194 | 0.245 |
| | (1.192) | (1.405) | (7.244) | | | | |

The lagged values of the explanatory variables showed better results, with the elasticity coefficients uniformly higher than those for their respective current values, and are all statistically significant. This finding reinforces our argument for the need to capture the effect of policy lags on tax yield. Apart from administrative lags, the enabling regulations allow for grace periods between the due date of a tax liability and the actual time to remit. This applies specifically to PPT and CIT. Of interest is the observed low elasticity of import duties (IMD) in both cases, in spite of the high annual volume and value of imports into the country. Some activities of government account for the observed results. During the oil boom periods, for example, public sector imports, which account for a significant proportion of total imports, were granted duty exemption. In addition, given the overall buoyancy of government revenue, tariffs on private imports were reduced, in addition to pervasive evasion of duty payments. Incidentally, this practice continued unabated thereafter. A similar explanation applies to excise duties (ED).

Table 8 adjusts for the effect of the oil boom on the productivity of these revenue sources, using a slope dummy function. The structure of the results is similar to that of Table 7. The results show that the oil boom led to a significant upward shift in non-oil revenue base ($NOR_1$) suggesting the interaction effect of oil boom on the non-oil sector. Similarly, there was a significant upward shift in PPT in relation to TOS. This finding conforms with expectation. Beyond these two, there was no significant shift in the intercept of other revenue sources. There was a change in the slope of GTR, however, a finding that is consistent with reality. The change was not significant for other sources. In general, the behaviour of the revenue sources was primarily determined by the significant shift in the intercept of the oil revenue source. This reflects the observed phenomenal upsurge in total revenue with the advent of the oil boom, which led to a steady growth in the GDP for several years thereafter.

The table also shows the effect of the oil boom on the behaviour (shift and slope) of the revenue sources. An examination of the results shows a marginally significant (at the 90% confidence level) positive change in the intercept of only the PPT, a finding consistent with expectation. However, the slope coefficients of NOR in relation to NGDP and of PPT in relation to TOS were significantly positively influenced, and marginally in respect of IMD. These results are also in order, since most of the oil boom proceeds were committed to massive importation. This view is further reinforced by the insignificant effects reported for ED and CIT, showing that the manufacturing sector did not benefit from the oil boom. The "enclave" nature of the oil sector is also buttressed by the finding for PPT in relation to GDP. The insignificance of the slope shows the absence of a permanent positive effect of the oil boom on the economy. In fact, contemporary evidence shows that the ratchet effect of the oil boom accounts for the current dismal state of the Nigerian economy. This shows that ineffective use rather than raising of revenue is the major bane of fiscal policy management in Nigeria. This reinforces the need for better management and productive use of the nation's resources.

**Table 8: Oil boom and tax yield 1970-1990**

| Equation | Constant | Elasticity co-efficient | Elasticity co-efficient lagged values | Slope | Shift | F-statistics | $R^2$ | DW | SER |
|---|---|---|---|---|---|---|---|---|---|
| 1 | -1.104 | 0.643 | 0.265 | 0.0000006 | 0.730 | 457.05 | 0.984 | 1.817 | 0.225 |
| | (1.516) | (3.922) | (1.607) | (0.631) | (2.940) | | | | |
| 2 | 0.8649 | 0.223 | 0.565 | 0.0000061 | 0.173 | 302.29 | 0.977 | 1.753 | 0.204 |
| | (0.967) | (1.522) | (3.062) | (3.362) | (1.040) | | | | |
| 3 | 0.254 | 0.297 | 0.466 | 0.0000018 | 0.209 | 162.27 | 0.957 | 1.987 | 0.258 |
| | (0.326) | (2.166) | (2.793) | (1.674) | (1.260) | | | | |
| 4 | -0.163 | 0.738 | 0.111 | 0.0000092 | -0.145 | 501.18 | 0.986 | 1.437 | 0.149 |
| | (0.355) | (7.008) | (1.097) | (1.462) | (0.989) | | | | |
| 5 | -0.777 | 0.188 | 0.846 | 0.0000019 | -0.216 | 243.06 | 0.971 | 1.99 | 0.245 |
| | (0.806) | (1.407) | (8.588) | (0.178) | (1.111) | | | | |
| 6 | -0.787 | 0.192 | 0.841 | 0.0000062 | -0.188 | 240.44 | 0.971 | 1.947 | 0.246 |
| | (0.838) | (1.364) | (8.313) | (0.301) | (1.031) | | | | |
| 7 | 1.172 | -0.076 | 1.092 | 0.0000015 | -0.905 | 203.37 | 0.965 | 1.423 | 0.777 |
| | (0.268) | (0.144) | (6.099) | (0.037) | (1.176) | | | | |
| 8 | -2.473 | 0.684 | 0.719 | 40.000013 | -1.084 | 310.16 | 0.977 | 1.256 | 0.632 |
| | (2.861) | (3.578) | (5.836) | (2.054) | (1.739) | | | | |
| 9 | -1.084 | 0.245 | 0.736 | 0.0000052 | 0.219 | 420.22 | 0.983 | 2.159 | 0.241 |
| | (0.991) | (1.441) | (5.384) | (0.534) | (1.027) | | | | |
| 10 | -0.817 | 0.205 | 0.761 | 0.0000152 | 0.246 | 395.29 | 0.982 | 2.136 | 0.248 |
| | (0.701) | (1.132) | (5.169) | (0.748) | (1.100) | | | | |

Lastly, Table 9 reports some interesting results regarding the effects of SAP on the productivity of the revenue sources. For example, the elasticity index for GTR was very significant for both current and lagged values of GDP. Further analysis shows that this finding was attributable to two main revenue sources, IMD and PPT, in which both the current and lagged values of GDP were significant. Similar findings were reported for PPT and TOS. This is a rather puzzling findings, which may be attributable to massive leakages and the magnitude of revenue involved. However, the determination of the actual causes of this finding awaits further research. This suggestion is reinforced by the finding for IMD in relation to IMP where only the current value of GDP was found significant, which is consistent with expectation given that import duties are assessed and payable immediately before the release of imported items. It also reflects a mopping-up of most of the laxity of the oil boom era in the collection and timely remittance of import duty proceeds.

**Table 9: Structural adjustment and tax yield in Nigeria (1970 — 1990)**

| Equation | Constant | Elasticity co-efficient | Elasticity co-efficient lagged values | Slope | Shift | F-statistics | $R^2$ | DW | SER |
|---|---|---|---|---|---|---|---|---|---|
| 1 | -1.767 | 0.509 | 0.2594 | 0.00000034 | -0.139 | 342.16 | 0.979 | 1.984 | 0.259 |
| | (2.243) | (2.749) | (4.101) | (0.284) | (0.554) | | | | |
| 2 | -0.365 | 0.219 | 0.759 | 0.0000071 | -0.553 | 315.31 | 0.977 | 2.063 | 0.199 |
| | (0.847) | (1.513) | (4.779) | (3.144) | (1.993) | | | | |
| 3 | -0.533 | 0.342 | 0.556 | 0.00000048 | 0.137 | 154.88 | 0.955 | 2.142 | 0.264 |
| | (1.127) | (2.555) | (3.393) | (0.408) | (0.536) | | | | |
| 4 | 0.074 | 0.706 | 0.103 | 0.0000051 | 0.184 | 569.54 | 0.987 | 1.752 | 0.140 |
| | (0.434) | (9.322) | (1.079) | (0.888) | (1.317) | | | | |
| 5 | 0.302 | 0.121 | 0.858 | 0.000001 | -0.252 | 238.39 | 0.970 | 1.816 | 0.246 |
| | (0.513) | (1.44) | (8.439) | (1.070) | (1.033) | | | | |
| 6 | -0.429 | 0.141 | 0.850 | 0.0000037 | -0.457 | 243.44 | 0.970 | 1.818 | 0.244 |
| | (0.661) | (1.226) | (8.305) | (1.3015) | (1.315) | | | | |
| 7 | 1.736 | -0.148 | 1.010 | 0.00000092 | 0.039 | 193.24 | 0.963 | 1.221 | 0.796 |
| | (0.421) | (0.294) | (6.734) | (0.245) | (0.051) | | | | |
| 8 | -0.487 | 0.68 | 0.59 | -0.005 | -0.98 | 218.9 | 0.97 | 0.87 | 0.67 |
| | (2.66) | (3.27) | (5.06) | (0.38) | (0.82) | | | | |
| 9 | -1.238 | 0.239 | 0.812 | 0.0000007 | -0.162 | 409.98 | 0.983 | 2.25 | 0.244 |
| | (1.150) | (1.382) | (6.162) | (0.623) | (0.678) | | | | |
| 10 | -0.998 | 0.165 | 0.876 | 0.000003 | -0.336 | 390.75 | 0.982 | 2.287 | 0.249 |
| | (0.706) | (0.923) | (6.982) | (1.064) | (0.961) | | | | |

Contrary to expectation, SAP did not affect the behaviour of the revenue sources. The only exception was NOR where both the intercept and the slope were positively and significantly affected. The finding suggests a renewed focus on enhanced efficiency in the administration of non-oil revenue sources during the SAP period. This was a desirable reversal of the trend of the oil boom era when there was near total neglect of these other revenue sources.

# VII. Discussion of research findings

Our analysis has thrown some light on the efficiency of tax administration in Nigeria over the period covered by the study. In general, the results reflect the effect of administrative lags and lapses in the implementation of tax-related policies. Consequently, there was a lag in the collection or remittance of tax proceeds into government coffers. Interestingly, this lapse also applies to import duties where in practice the collection of duties on imports is instantaneous. However, it properly reflects the grace periods allowed for the remittance of company income tax and on petroleum tax and royalties. To provide evidence on the buoyancy of the tax system and each tax source, a first-difference semi-log regression analysis of Equation 12 was performed. The derived elasticities reported in Table 10 are fairly revealing. For the total period covered by the study (column A), there was an elasticity of 1.18 for GTR relative to GDP. The non-oil component, however, performed slightly lower with an elasticity of 0.94, while the performance of IMD followed the same trend.

**Table 10: Index of tax buoyancy (1970 — 1990)**

| | Period | | |
|---|---|---|---|
| | A<br>Trend: 1960—90 | B<br>Oil-boom | C<br>SAP |
| 1 | 1.18 | 1.88 | 1.24 |
| 2 | 0.94 | 0.61 | 0.89 |
| 3 | 0.80 | 0.58 | 0.77 |
| 4 | 0.84 | 0.83 | 0.89 |
| 5 | 0.93 | 1.10 | 0.98 |
| 6 | 1.02 | 1.10 | 1.06 |
| 7 | 2.60 | 2.70 | 3.13 |
| 8 | 1.51 | 1.48 | 1.64 |
| 9 | 1.21 | 1.05 | 1.29 |
| 10 | 1.32 | 1.09 | 1.38 |

The cumulative effect of the oil boom (PPT) was reflected in a spectacular elasticity of 2.60 and 1.51 in relation to GDP and TOS, respectively. The result needs to be interpreted with caution. For example, the fortune of the oil sector is determined by the policies of the Organization of Petroleum Exporting Countries (OPEC). Hence, developments within the economy have no direct bearing on oil revenue unless it affects the export quota allocated to each country by OPEC. The coefficient of 1.51 for TOS reflects increases in rates and royalties over time, coupled with enhanced efficiency in

revenue collection. An elasticity coefficient of 1.21 for CIT is also commendable and suggests an improved efficiency in tax collection from this source over the years. It also probably reflects the ability to bring into the tax net the numerous limited liability companies that sprang up all over the country following the oil boom. It is also attributable to an improvement in the accounting and recording habit of most companies, especially those applying for quotation on the Nigerian capital market.

The results highlighting the differential effect of the oil boom (column B) are also revealing. As expected, the oil boom has a significant positive effect on the overall buoyancy of the country's revenue sources, rising to 1.88. This contrasts with a slight deterioration of the non-oil component of the GDP whose coefficient fell from 0.94 to 0.61 during the study period.

The deterioration of the buoyancy of IMD to 0.58 in relation to the GDP deserves attention. On the face value, the result seems puzzling. However, that the result is consistent with government policies during and (to a lesser degree) after the oil boom eras suggests the plausibility of the observed result. For example, during the oil boom, a significant proportion of imports was for the public sector on which no duty was assessed. Prominent among these were the so-called "cement armada" of 1974, the massive importation of rice around 1979 to 1980, and the various sectoral projects such as water, agriculture and health being financed either wholly by the federal government or with loans or grants from the international financed institutions.

The private sector also benefitted from the relaxed posture of government on import duties. During the oil boom, there was a general reduction in tariff on all categories of imports, coupled with unbridled approval of import prohibition and import duty waivers to various categories of importers. There was also pervasive evasion of duty payment.

ED performed better with elasticities greater than unity. Around this period, many manufacturing companies were established, prodded on by readily available and relatively cheap imported inputs. Given the unusually high "profitability" of these enterprises, there was increase in voluntary compliance with tax regulations. Further, the distinction between GDP and NGDP is more apparent than real, given that oil revenue boosted economic activities in the non-oil sectors of the economy. Hence, the elasticity of 1.10 in both cases seems understandable.

The improved buoyancy of GTR noted earlier seems explainable by the surge in oil revenue. This is buttressed by the slight improvement in buoyancy of PPT from 2.60 for the whole period to 2.70 during the oil boom period. However, the deterioration of PPT buoyancy to 1.48 in relation to TOS suggests some laxity in both the recording of oil sales and the collection of tax proceeds. This general laxity during the oil boom eras also affected the CIT, although to a lesser degree, and the elasticity coefficients in both cases were above unity.

Finally, column C reports the effect of SAP on the productivity of the tax sources. The findings suggest about 30% reduction in the overall productivity of GTR. The non-oil component of GTR and IMD performed slightly better than during the oil-boom periods. ED also maintained its steady performance even during the SAP era.

The phenomenal increase in the coefficient of PPT to 3.13 was not unconnected with the improvement in the price of oil after 1985, as well as the deregulation of the foreign

exchange market. The latter led to a massive deterioration in the exchange rate of the Nigerian currency (naira) especially against the US dollar. The monetization of oil proceeds thus increased the nominal naira value of oil revenue.

The productivity of CIT also improved slightly during the SAP era, which seems encouraging given the general fall in the fortunes of private sector operators. This probably reflects an improvement in tax administration by minimizing leakages and enforcing compliance with tax regulations and requirements. The adequacy of this improvement cannot be accurately determined, however, given the mixed performance of the economy during the period. While some organizations, especially those in the financial and services sector, had a field day, the productive sector suffered from the biting effects of SAP.

Some general observations are evident from the discussion above. First, the level of efficiency in tax administration seems to vary inversely with the overall state of the economy, but positively with developments within the oil sector. Further, some lapses in the administration of the tax system in Nigeria are still reflected in lags in policy implementation and delayed collection and remittance of tax proceeds to appropriate agencies of government. Leakages in form of tax evasion also still persist. Second, the overall picture from the productivity assessment suggests an acceptable level of performance. However, consistent with the Dutch-disease concept discussed earlier, the oil boom encouraged laxity in the management of non-oil revenues especially CIT and IMD. Even for oil revenue sources, there seems to be inadequate monitoring of PPT in relation to TOS. However, the end of the oil boom and subsequent introduction of SAP led to enhanced efficiency in the management of non-oil tax sources.

The results suggest that the current revenue profile of the country is sustainable. In fact, some slight improvements in the administration of the tax system could lead to appreciable increase in total revenue. Going by the principle of management-by-exception, import duty collection requires special attention, while proper recording and transparency of operations will significantly improve tax productivity of the oil sector. Opportunities also exist for minimizing leakages in terms of tax evasion and diversion of tax proceeds, but, the extent of improvement attainable can only be ascertained through additional research and availability of required data.

# VIII. Concluding remarks

This study evaluated the productivity of Nigeria's tax system over a period spanning three decades. Although the productivity level appears satisfactory overall, the results indicate wide variations in the level of productivity by tax source. This was attributable to laxity in the administration of non-oil tax sources during the oil boom periods, which suggests the effect of the Dutch-diseases syndrome discussed earlier. Some of these laxness was mopped up at the end of the "honeymoon", however, especially with the commencement of SAP in 1986.

In the context of this study's objectives, it appears the current revenue profile of the nation is sustainable. Further, opportunities for improvement exist especially in import duty collection. Better monitoring and transparency of operations within the petroleum oil industry will also ensure a significant increase in total government revenue. The government should also desist from revenue bursting activities such as unbridled granting of both the prohibition and duty waiver for public sector projects and few privileged individuals within the society.

In addressing the fiscal deficit issue, this study's findings suggest room for much improvement in revenue collection especially from import duties and petroleum taxes and royalties. Also, given the present state of the economy, upward revision of tax rates especially company income tax and excise duties may be counterproductive. Hence, the search for a meaningful solution to the chronic problem of fiscal deficit requires a combination of more efficient tax administration and significant reduction in government expenditure. The findings also explicitly suggest the need for prudent management and productive use of the nation's financial resources.

In particular, consistent with the requirements of SAP, the government should withdraw from several economic activities that the private sector is able and willing to provide more efficiently. There is also the need to streamline the quantum and sequencing of implementation of public sector projects. A significant reduction in public waste evidenced by the large number of abandoned projects all over the country will effectively contain the deficit problem.

Finally, the report once again confirms the low quality of the tax information system, which always hinders a comprehensive and objective appraisal of the performance of the Nigerian tax system. As noted in the literature, economic reform includes the restructuring of the fiscal stance, of which tax policy is a major component. The absence of reliable adequate tax-related information will therefore negatively affect the accuracy and adequacy of fiscal reforms. It is in view of this that we urge the Nigerian authorities to squarely address this problem to enhance the usefulness of tax policy as a tool for effective

macroeconomic planning and implementation.

In appraising this study's findings, the interested reader is advised to keep in view the following observations and limitations. First, the overall objective of the study was to assess the various aspects of the productivity of the Nigerian tax system. Because non-availability of required data limited the extent of the analysis performed, there is need for the Nigerian tax authorities to differentiate discretionary from non-discretionary tax changes, and to improve significantly upon the quality of tax-related data. Second, ability to assess accurately the productivity of some tax sources requires more reliable sectoral data. For example, assessment of excise duties requires data on industrial and manufacturing activities. Similarly, appraisal of CIT requires accurate data on company profits and significant reduction in tax evasion. We hope that future research will be able to overcome these and other limitations not expressly addressed in this report.

Finally, the paper's conclusions assumed that the present trend and structure of tax revenue will persist. However, we are aware of the volatile nature of the international oil market, which is subject to manipulation by price leaders within the oil oligopoly. However, going by historical antecedents, there should be no highly disruptive developments in the oil sector. The paper could not accurately anticipate the introduction of new tax sources, which may significantly alter the main thrust of this study's findings. We therefore urge continual assessment of the productivity of Nigeria's tax system as well as additional studies to capture the effects of new developments that may affect the tax system.

# Notes

1. Normally, the figures in the first column of Table 1 should be identical with the figures in the first row of Table 2. However, the data were collected at different times when the data source had been revised and updated. This is a reflection of the problem of serious inconsistencies among African data documented in the literature (e.g., Ariyo, 1997, 1996; Ariyo and Adenikinju, 1996). The issue is also being looked into by several organizations, especially the African Economic Research Consortium.

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